

January 24, 2022

Mr. Ricky Vargas
Project Manager
Land and Redevelopment Programs Branch
Land, Chemicals and Redevelopment Division
United States Environmental Protection Agency, Region 2
290 Broadway, 25th Floor
New York, New York 10007

**Subject: Catalyst Bead Site Investigation Report
Former Chevron Perth Amboy Facility, Perth Amboy, New Jersey
EPA ID No. NJD081982902**

Dear Mr. Vargas,

Parsons Environment and Infrastructure, Inc. (Parsons) has prepared this Catalyst Bead Site Investigation Report (SIR) to present the results of the catalyst bead sampling completed in Solid Waste Management Units (SWMUs) 7, 19, 39, and 40. SWMUs 7, 19, 39, and 40 are in the Main Yard at the former Chevron Perth Amboy Facility (Facility) in Perth Amboy, New Jersey (**Figure 1**). The objective of the Site Investigation (SI) was to collect representative samples of the catalyst beads for analysis of polychlorinated biphenyls (PCBs) to evaluate the potential for PCB contamination associated with historical use of the catalyst beads in the petroleum refining process performed at the Facility. This Catalyst Bead SIR is being submitted to the United States Environmental Protection Agency (USEPA) and New Jersey Department of Environmental Protection (NJDEP) for review and approval.

SITE INVESTIGATION

The SI of catalyst beads was performed in October 2021, in accordance with the approved Catalyst Bead Site Investigation Work Plan (SIWP) – Revision 1. The SI focused on the collection of representative samples of catalyst beads from SWMUs 7, 19, 39, and 40 for PCB analysis. Soil borings were advanced in all four SWMUs to facilitate collection of the catalyst bead samples.

Soil Sampling Methodology and Analytical Protocols

Soil borings were advanced using a Geoprobe® direct-push soil sampling system operated by a New Jersey-licensed driller. The Geoprobe® was used to advance a standard five-foot long, two-inch diameter Macro-Core® soil sampling device below the ground surface. Soil samples primarily consisting of catalyst beads, were collected in accordance with the NJDEP Field Sampling Procedures Manual (2005) and the USEPA-approved Catalyst Bead SIWP – Revision 1.

An NJDEP-certified laboratory analyzed soil samples consisting of catalyst beads and soil for PCBs following USEPA SW846 Method 8082A.

Upon sampling completion, soil borings were backfilled with soil cuttings. The surface was restored to previous site conditions and marked for surveying. All soil borings were surveyed for elevation (in the National Geodetic Vertical Datum of 1929, or NGVD29) and surface location.

Sampling Program

Samples were collected and evaluated in accordance with the NJDEP Technical Requirements for Site Remediation (2012) and the sampling requirements outlined in the NJDEP Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil (2015).

In accordance with the SIWP, Chevron collected samples of catalyst beads from SWMUs 7, 19, 39 and 40 located in the Facility's Main Yard. Three soil borings were drilled in SWMUs 39 and 40, one soil boring each was drilled in SWMUs 7 and 19, and catalyst bead samples were collected for laboratory analysis. The soil borings were located outside previous treatment areas and biased to previous soil boring locations where catalyst beads were observed in the subsurface. One catalyst bead sample was collected from each soil boring for PCB analysis. Sample intervals were biased to the 6-inch interval with the greatest number of catalyst beads.

The historical soil boring locations are provided as **Attachment 1**, and sampling details are summarized in **Table 1**.

ANALYTICAL RESULTS

Eight soil borings were advanced and sampled to evaluate PCB concentrations in catalyst beads at SWMUs 7, 19, 39, and 40, as described below. Sampling was performed in accordance with the SIWP – Revision 1. The analytical results for PCBs are presented in **Table 1**. Soil boring locations and PCB sample results are presented on **Figures 2, 3 and 4**.

SWMU 7

One soil boring (S6062) was advanced in SWMU 7 adjacent to historical soil boring U007-014. Sample S6062D3 was collected from 7.0 to 7.5 feet below ground surface (bgs) for PCB analysis. PCBs were detected at 0.038 milligrams per kilogram (mg/kg), which is below the NJDEP Soil Remediation Standards (SRS) Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA Toxic Substance Control Act (TSCA) limit (1.0 mg/kg). Soil boring locations and PCB sample results are presented on **Figure 2**.

SWMU 19

At SWMU 19, soil boring S6063 was advanced adjacent to historical soil boring S5198. Sample S6063B4 was collected from 3.5 to 4.0 feet bgs for PCB analysis. PCBs were non-detect, with method detection limit (MDL) at 0.0081U mg/kg, which is below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA TSCA limit (1.0 mg/kg). Soil boring locations and PCB sample results are presented on **Figure 4**.

SWMU 39

At SWMU 39, three soil borings (S6056, S6057 and S6058) were advanced adjacent to historical soil borings SB-0052, S4488, and S5277 at SWMU 39, respectively. Soil boring locations and PCB sample results are presented on **Figure 3**.

At soil boring S6056, one sample (S6056E2) was collected from 8.5 to 9.0 feet bgs for PCB analysis. PCBs were detected at 0.039 mg/kg, which is below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA TSCA limit (1.0 mg/kg).

At soil boring S6057, one sample (S6057E3) was collected from 9.0 to 9.5 feet bgs for PCB analysis. PCBs were non-detect, with MDLs at 0.008U¹ mg/kg, which is below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA TSCA limit (1.0 mg/kg).

At soil boring S6058, one sample (S6058G4) was collected from 13.5 to 14.0 feet bgs for PCB analysis. PCBs were detected at 0.094 mg/kg, which is below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA TSCA limit (1.0 mg/kg).

SWMU 40

At SWMU 40, three soil borings (S6059, S6060 and S6061) were advanced adjacent to historical soil borings S40TP1/S0803, S0805 and S4581, respectively. Soil boring locations and PCB sample results are presented on **Figure 2**.

At soil boring S6059, one sample (S6059E4) was collected from 9.0 to 9.5 feet bgs for PCB analysis. PCBs were detected at 0.34 mg/kg, which is below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA TSCA limit (1.0 mg/kg). PCBs at a concentration of 0.34 mg/kg exceeded NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg).

At soil boring S6060, one sample (S6060B1) was collected from 2.0 to 2.5 feet bgs for PCB analysis. PCBs were detected at 0.063 mg/kg, which is below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA TSCA limit (1.0 mg/kg).

At soil boring S6061, one sample (S6061B2) was collected from 2.5 to 3.0 feet bgs for PCB analysis. PCBs were detected at 0.025 mg/kg, which is below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway (1.1 mg/kg), NJDEP SRS Residential Ingestion-Dermal Exposure Pathway (0.25 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), and USEPA TSCA limit (1.0 mg/kg).

¹ U is a laboratory qualifier indicating the analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted MDL for sample and method.

The PCB results show that all the samples were below the NJDEP SRS Nonresidential Ingestion-Dermal Exposure Pathway, NJDEP SRS Migration to Groundwater Exposure Pathway, and USEPA TSCA limit. Only one sample (S6059E4) exceeded the NJDEP SRS Residential Ingestion-Dermal Exposure Pathway standard (0.25 mg/kg).

CONCLUSIONS/ RECOMMENDATIONS

Historical investigations indicate that the catalyst beads identified in the subsurface at the Facility are delineated on site. The historical investigations also indicate significant amounts of catalyst beads identified in the fill material overlying in the native soil are limited to SWMUs 7, 19, 39 and 40. The results of the PCB analyses performed in accordance with the catalyst bead SIWP implemented at the Facility addressed the data gaps remaining from historical investigations.

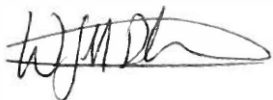
The SI results show that PCBs were not detected in the catalyst beads in SWMU 19, and only low level PCB concentrations were detected in the the samples collected from SWMUs 7, 39 and 40. The results also show that PCB concentrations do not exceed the NJDEP SRS Nonresidential Ingestion-Dermal exposure pathway (1.1 mg/kg), NJDEP SRS Migration to Groundwater Exposure Pathway (1.6 mg/kg), or USEPA TSCA limit (1.0 mg/kg).

Only one sample (S6059E4) collected from SWMU 40 exhibited PCB concentrations in excess of the NJDEP SRS Residential Ingestion-Dermal Exposure Pathway of 0.25 mg/kg. Since PCBs were not detected above the NJDEP SRS Nonresidential Ingestion-Dermal exposure pathway or the TSCA limit, the low-level PCB concentrations detected in the catalyst beads will be addressed with a Deed Notice.

CLOSING

Based on the results summarized above and conclusions presented herein, Chevron requests review and approval by the USEPA of the catalyst bead SI results and requests no further action for PCBs in catalyst beads at the former Chevron Perth Amboy Facility. Should you require any additional information, please contact me directly at (570) 977-6464.

Sincerely,



Jeff Detrick, CHMM
Project Manager
Parsons

References and Attachments (see list on following page)

cc: Mr. Charlie Zielinski, NJDEP
Mr. Brian Connors, CEMC
Mr. Mike Samuel, Buckeye Perth Amboy Terminal, LLC
Ms. Krista Manley, Buckeye Perth Amboy Terminal, LLC

D-ID Number 2021-044-30

REFERENCES

NJDEP. 2005. Field Sampling Procedures Manual.

NJDEP. 2012. Technical Requirements for Site Remediation.

NJDEP. 2015. Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil.

USEPA. 2021. Approval, Catalyst Bead Site Investigation Work Plan for SWMUs 7, 19, 39 and 40 -Revision 1, dated August 31, 2021.

ATTACHMENTS

Table 1 – Summary of PCB Sampling Results

Figure 1 – Aerial Photograph of Former Chevron Perth Amboy Facility

Figure 2 – SWMU 7 and 40 with PCB Sampling Results

Figure 3 – SWMU 39 with PCB Sampling Results

Figure 4 – SWMU 19 with PCB Sampling Results

Attachment 1 – Historical Boring logs

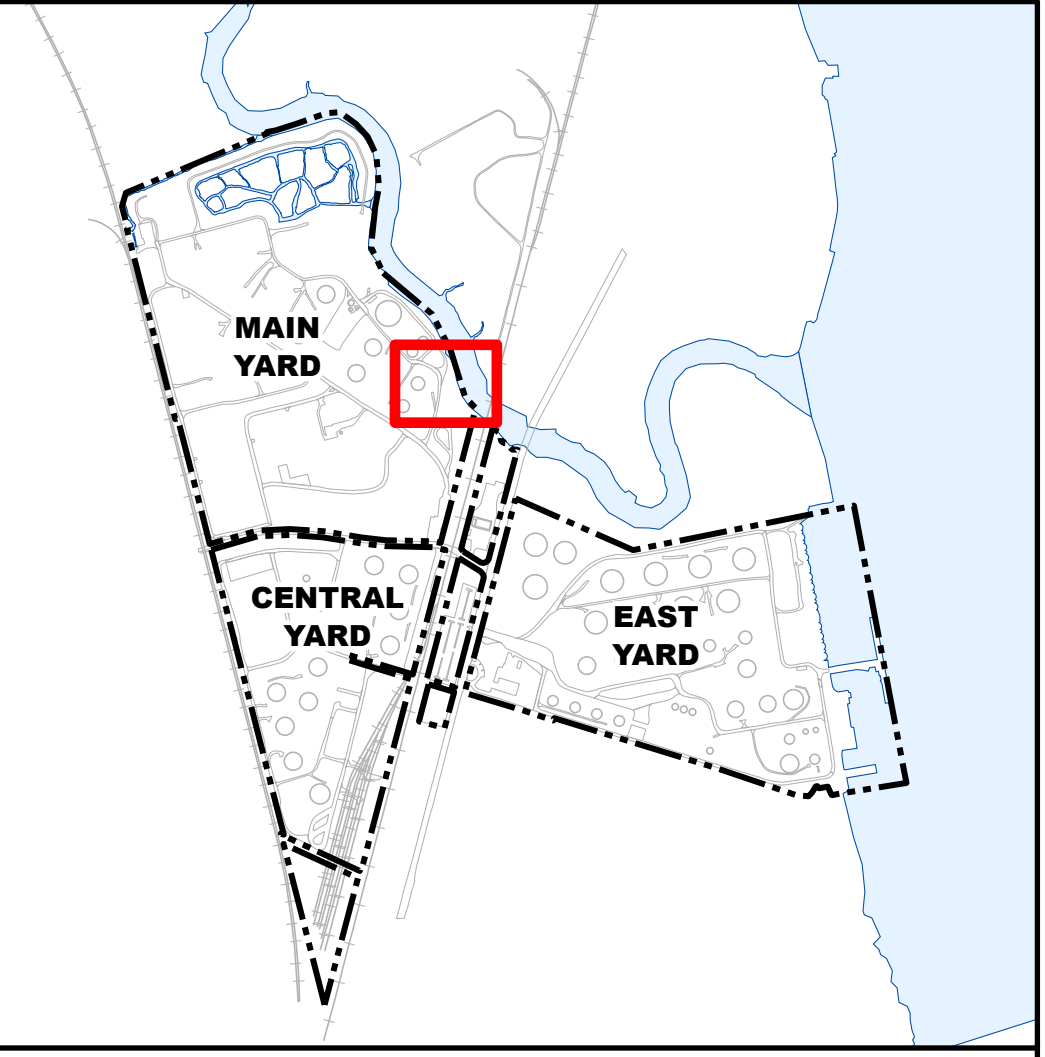
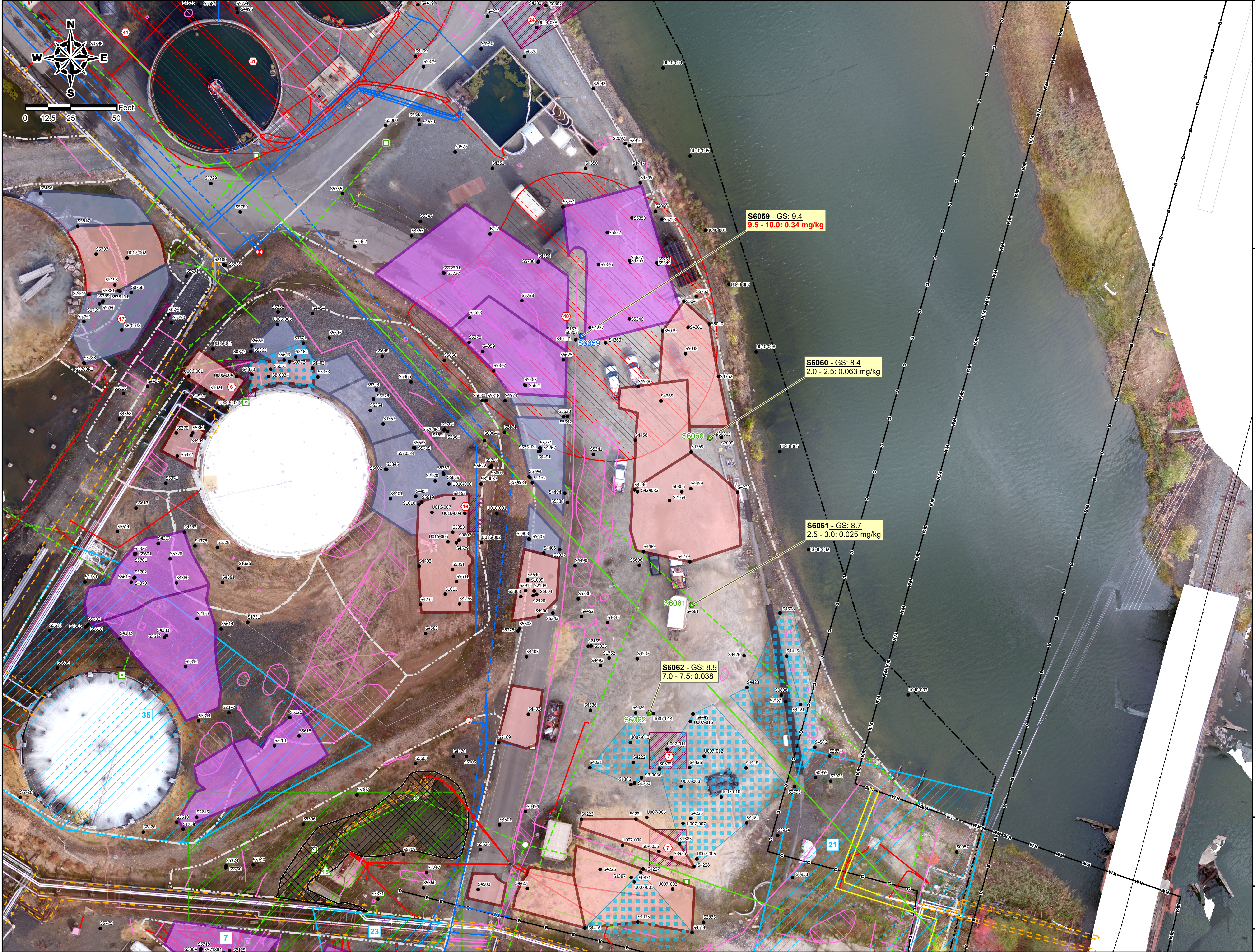
TABLE

Table 1
Summary of PCB Sampling Results - SWMU 7, 19, 39 and 40
Catalyst Beads Site Investigation Report
Former Chevron Perth Amboy Facility -Perth Amboy, New Jersey

Parameter Name	SRS Ingestion-Dermal Residential (mg/kg)	SRS Ingestion-Dermal Nonresidential (mg/kg)	SRS Migration to Groundwater (mg/kg)	USEPA TSCA Limit	Location ID	S6056	S6057	S6058	S6059	S6060	S6061	S6062	S6063
					Areas	SWMU 39	SWMU 39	SWMU 39	SWMU 40	SWMU 40	SWMU 40	SWMU 7	SWMU 19
					Field Sample ID	S6056E2	S6057E3	S6058G4	S6059E4	S6060B1	S6061B2	S6062D3	S6063B4
					Sample Date	10/14/2021	10/14/2021	10/14/2021	10/14/2021	10/14/2021	10/14/2021	10/14/2021	10/14/2021
					Depth (ft bgs)	8.5 - 9.0	9.0 - 9.5	13.5 - 14.0	9.5 - 10.0	2.0 - 2.5	2.5 - 3.0	7.0 - 7.5	3.5 - 4.0
					Report Units	Report Result	Report Result	Report Result	Report Result	Report Result	Report Result	Report Result	Report Result
Aroclor 1016	NA	NA	NA	NA	mg/kg	0.0045 U	0.0052 U	0.0041 U	0.0045 U	0.0041 U	0.0038 U	0.0041 U	0.0053 U
Aroclor 1221	NA	NA	NA	NA	mg/kg	0.007 U	0.008 U	0.0064 U	0.007 U	0.0063 U	0.0058 U	0.0064 U	0.0081 U
Aroclor 1232	NA	NA	NA	NA	mg/kg	0.0056 U	0.0064 U	0.0051 U	0.0056 U	0.0051 U	0.0047 U	0.0051 U	0.0065 U
Aroclor 1242	NA	NA	NA	NA	mg/kg	0.0056 U	0.0064 U	0.0051 U	0.0056 U	0.0051 U	0.0047 U	0.0051 U	0.0065 U
Aroclor 1248	NA	NA	NA	NA	mg/kg	0.0045 U	0.0052 U	0.023	0.17 NJ	0.022 NJ	0.0038 U	0.0041 U	0.0053 U
Aroclor 1254	NA	NA	NA	NA	mg/kg	0.02 J	0.0069 U	0.044	0.17 NJ	0.024	0.025	0.038	0.007 U
Aroclor 1260	NA	NA	NA	NA	mg/kg	0.019 NJ	0.0061 U	0.027	0.0053 U	0.017 J	0.0044 U	0.0049 U	0.0062 U
Total PCBs	0.25	1.1	1.6	1.0	mg/kg	0.039	0.008 U	0.094	0.34	0.063	0.025	0.038	0.0081 U

Notes:
Bold and shaded indicates exceedance to NJDEP SRS Ingestion Dermal Residential
NA - No action level limit available for this parameter
U - Analyte not detected at that concentration
J - Analyte concentration estimated
NJ - Analyte concentration estimated
PCB - Polychlorinated Biphenyls
SWMU - Solid Waste Management Unit

FIGURES



Legend

● Soil Boring - PCB > 0.25 mg/kg	▨ Electrical Line
● Soil Boring - PCB < 0.25 mg/kg	▨ Metal Anomaly
● Soil Boring - No PCB Results	▨ No Geophysical Investigation Completed
▨ ESS and ISS CMs	▨ Water Line
▨ ESS CM Only	○ Utility Point
▨ ISS CM Only	--- Fire Water System
▨ Arsenic Excavation	--- Oily-Water Sewer System
▨ Benzene Excavation	— Major Pipeline, Buckeye
▨ Soil Mixing	— Major Pipeline, Colonial
	— Major Pipeline, Kinder Morgan
	▨ Above Ground Pipeway
	▨ AOC Boundary
	▨ PAOC Boundary
	▨ SWMU Boundary
	▨ Suspected TEL Burial Area
	▨ Property Line
	— Railroad

Surveyed Utilities

— Electrical Line	▨ AOC Boundary
— Gas Line	▨ PAOC Boundary
— Metal Anomaly	▨ SWMU Boundary
— Sewer Line	▨ Suspected TEL Burial Area
— Water Line	▨ Property Line
▨ Area of Geophysical Investigation	— Railroad

PERTINENT NOTES:

1. Screen depths have been converted to elevation (NGVD29).
2. Values in BLUE indicate results above NJDEP Residential SRS (PCBs > 0.25 mg/kg).

Location ID Ground Surface Elev. (ft. NGVD)

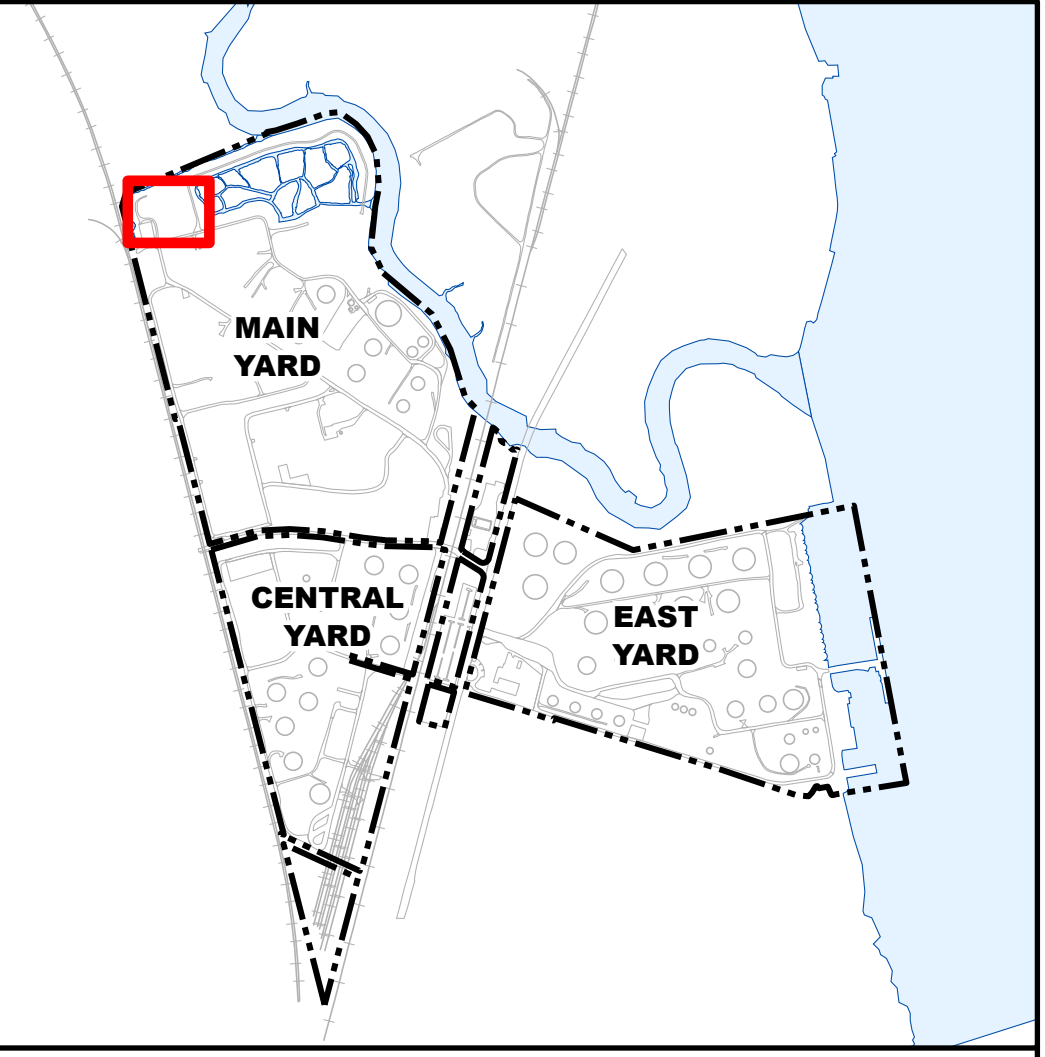
S4429 - GS: 4.9
9.0' - 9.5': 0.004

PCB Results (mg/kg)
Depth (ft bgs)

GENERAL NOTES:

1. Aerial photograph dated October 2017 was provided by Parsons.
2. The horizontal datum is the New Jersey State Plane Coordinate System NAD83.
3. The vertical datum is the National Geodetic Vertical Datum of 1929 (NGVD29).

Path: C:\Projects\Chevron\DMIS\Projects\ISS-ESS\Sidewalk\Catalyst Bead Site\Report\Map - Catalyst Bead Site Investigation Work Plan

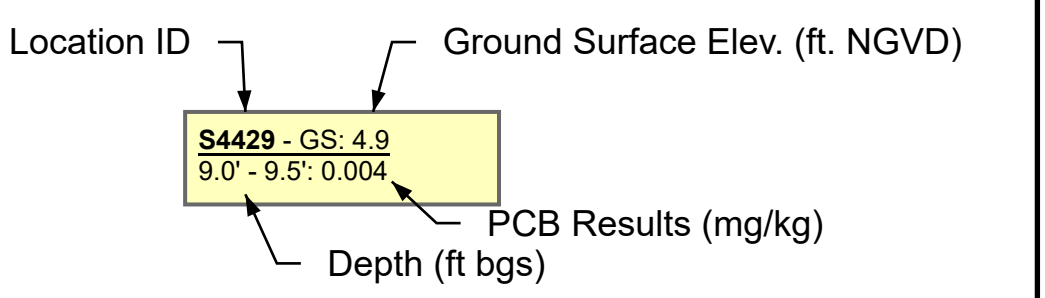


Legend

● Soil Boring - PCB > 0.25 mg/kg	▨ Area of Geophysical Investigation
● Soil Boring - PCB < 0.25 mg/kg	▨ Electrical Line
● Soil Boring - No PCB Results	▨ Metal Anomaly
▨ ESS CM Only	▨ No Geophysical Investigation Completed
▨ ISS CM Only	▨ Water Line
Surveyed Utilities	▨ Fire Water System
▨ Electrical Line	▨ Oily-Water Sewer System
▨ Metal Anomaly	▨ AOC Boundary
▨ Sewer Line	▨ SWMU Boundary
▨ Water Line	▨ Property Line

PERTINENT NOTES:

1. Screen depths have been converted to elevation (NGVD29).
2. Values in BLUE indicate results above NJDEP Residential SRS (PCBs > 0.25 mg/kg).



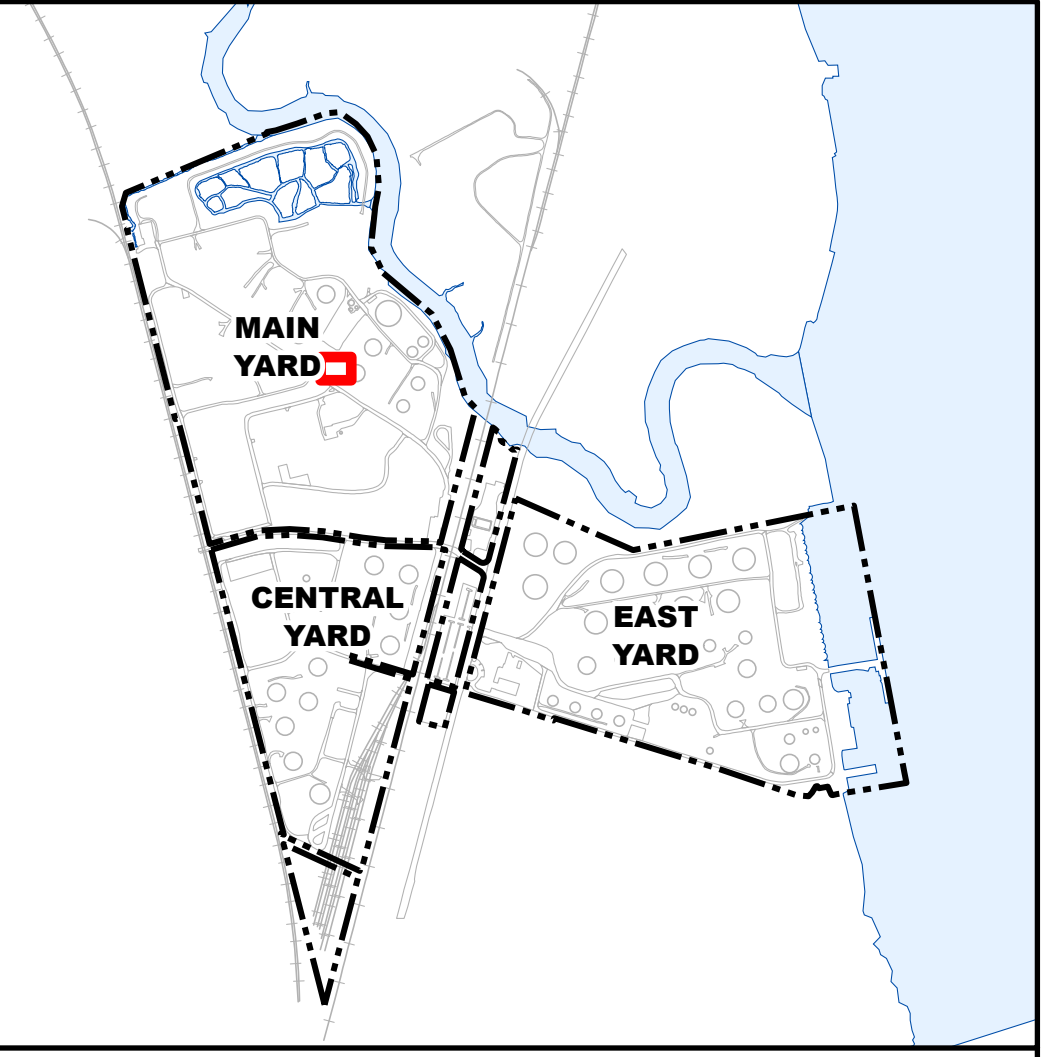
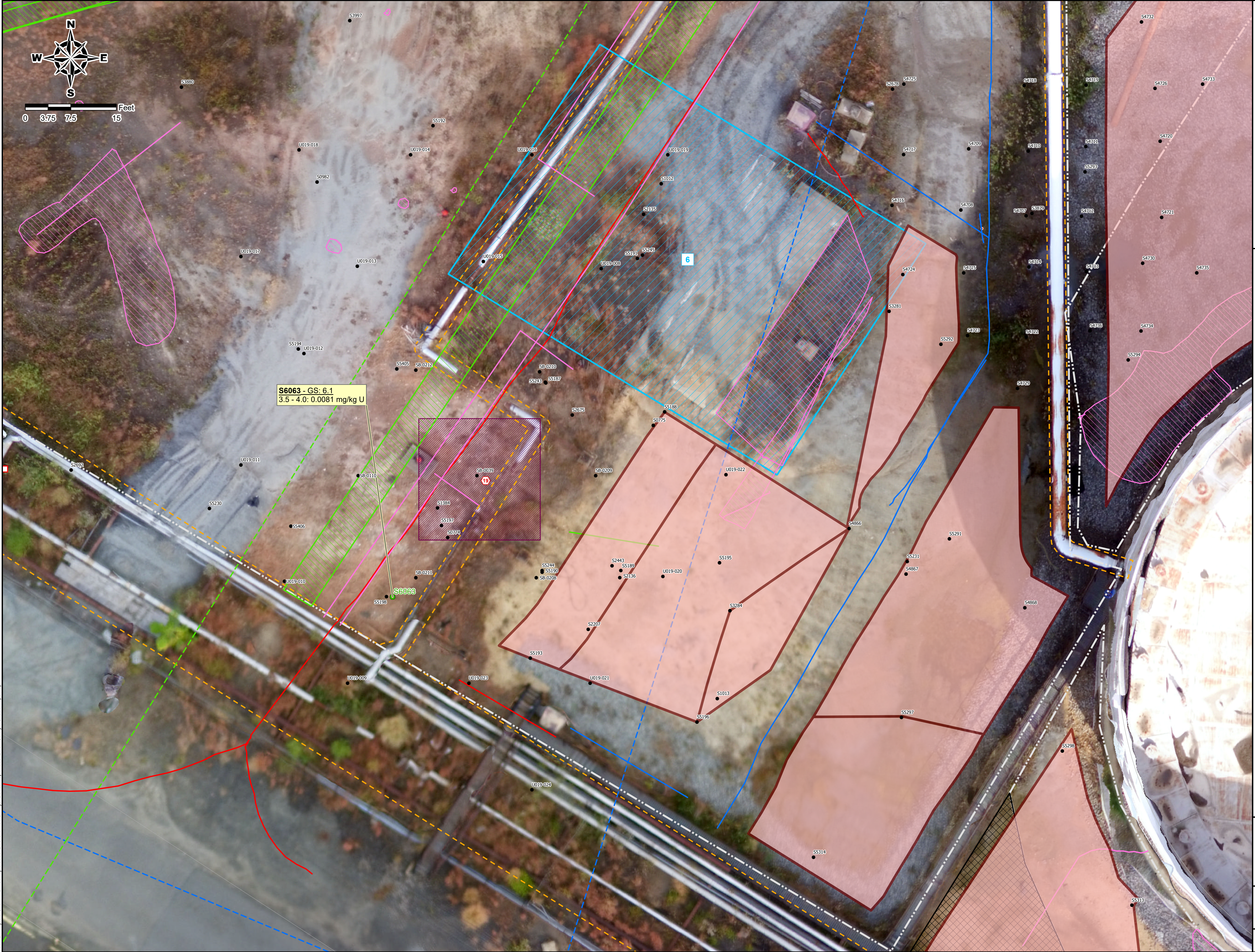
GENERAL NOTES:

1. "U" = Compound not detected above MDL.
2. Aerial photograph dated October 2017 was provided by Parsons.
3. The horizontal datum is the New Jersey State Plane Coordinate System NAD83.
4. The vertical datum is the National Geodetic Vertical Datum of 1929 (NGVD29).

SWMU 39 AREA
CMi EXTENTS AND PCB RESULTS
CATALYST BEAD SITE INVESTIGATION WORK PLAN

Chevron
ENVIRONMENTAL MANAGEMENT COMPANY
PERTH AMBOY, NEW JERSEY

PROJECT #: 452501-82000	DATE: 12/22/2021	DWN: ADW	CHKD: RS	FIG NO.: 3
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Legend

●

Soil Boring - PCB > 0.25 mg/kg

●

Soil Boring - PCB < 0.25 mg/kg

●

Soil Boring - No PCB Results

ESS CM Only

Electrical Line

Metal Anomaly

Sewer Line

Water Line

Area of Geophysical Investigation

Metal Anomaly

No Investigation Completed

Sewer Line

●

Utility Point

Firewater, Hose Reel Station

Fire Water System

Oily-Water Sewer System

Above Ground Pipeway

PAOC Boundary

Suspected TEL Burial Area

Property Line

Surveyed Utilities

Electrical Line

Metal Anomaly

Sewer Line

Water Line

Area of Geophysical Investigation

Metal Anomaly

PERTINENT NOTES:

1. Screen depths have been converted to elevation (NGVD29).

2. Values in BLUE indicate results above NJDEP Residential SRS (PCBs > 0.25 mg/kg).

Location ID

Ground Surface Elev. (ft. NGVD)

S4429 - GS: 4.9

9.0' - 9.5': 0.004

Depth (ft bgs)

PCB Results (mg/kg)

GENERAL NOTES:

1. "U" = Compound not detected above MDL.

2. Aerial photograph dated October 2017 was provided by Parsons.

3. The horizontal datum is the New Jersey State Plane Coordinate System NAD83.

4. The vertical datum is the National Geodetic Vertical Datum of 1929 (NGVD29).

SWMU 19 AREA

CM EXTENTS AND PCB RESULTS

CATALYST BEAD SITE INVESTIGATION WORK PLAN

Chevron

CHEVRON

ENVIRONMENTAL MANAGEMENT COMPANY

PERTH AMBOY, NEW JERSEY

PROJECT #:

452501-82000

DATE:

12/22/2021

DWN:

ADW

CHKD:

RS

FIG NO.:

4

ATTACHMENT 1 HISTORICAL BORING LOGS

Site: Chevron: Perth Amboy, NJ	Drilling Company: JCA	Northing: 621673.31
Boring/Well ID: S0803	Driller: NA	Easting: 557902.03
Permit No: NA	Consulting Firm: Parsons	Elevation: 9.1
Location: SWMU 40	Logged By: KS	Datum: Ground Surface
Start Date/Time: 07/31/2002	Drill Rig Type: Geoprobe	Total Depth: 18.0 Ft
Complete Date: 07/31/2002	Drilling Method: Macrocore	Boring Diameter: 2 In
Weather: NA	Sample Method:	Water Depth in Soil: 6 Ft
Field Book No: #1 team	Hammer Weight: NA	
	Hammer Drop: NA	

Remarks:

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
0			12	FILL	SW	Dark Brown c-f SAND, m-f gravel, dry, m-dense
			1.2			
1	S0803A3		16	FILL	SW	Light Brown f-SAND, dry, loose
	S0803A4		9	FILL	SW	Gray c-f SAND, gravel, m-dense, dry
2			0.9			
			2.2			
3			75	FILL	CL	Reddish Brown SILT-CLAY, some f-sand, little f-gravel, soft, moist
			57	FILL		Catalyst Beads, product-like odor, product-like stain
4			40	FILL	CL	Gray CLAY, some sand, trace f-gravel, soft, moist, product-like odor
			13			
5			15			
			17			
6			28	FILL		Catalyst Beads, loose, wet, product-like odor, very small product-like globules, gw encountered
			23			
7			30			
			20			
8			36	FILL	CL	Reddish Gray CLAY, trace f-sand, soft, moist, very little gravel
			87	FILL	SW	Brown m-f SAND, catalyst beads, loose, wet, product-like odor
9			35			
			58			
10			52			
			31			
11			74			
	S0803F4		460	FILL	CL	Gray CLAY, m-f sand, some gravel, soft, moist, product-like odor
12			352	Native	CL	Black-stained CLAY, trace f-sand, very loose, very wet, product-like odor
			194			
13			30			
			37	Native	CL	Black-stained CLAY, trace f-sand, soft, moist, product-like odor
14			34			
			40			
15			8.3	Native	CL	Dark Gray CLAY, soft, moist
	S0803H4		2.5			
16			3.6			
			2			
17			0.7			
			0.7			
18.0						

Site: Chevron: Perth Amboy, NJ	Drilling Company: JCA	Northing: 621619.1
Boring/Well ID: S0805	Driller: NA	Easting: 557976.45
Permit No: NA	Consulting Firm: Parsons	Elevation: 7
Location: SWMU 40	Logged By: MW	Datum: Ground Surface
Start Date/Time: 07/25/2002	Drill Rig Type: Geoprobe	Total Depth: 12.0 Ft
Complete Date: 07/25/2002	Drilling Method: Macrocore	Boring Diameter: 2 In
Weather: NA	Sample Method: Grab Sample	Water Depth in Soil: 4.5 Ft
Field Book No: RFI 69	Hammer Weight: NA	
	Hammer Drop: NA	

Remarks: MW-126 was installed.

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
0			0.6	FILL	ML	Light Brown SILT, some f-sand, trace c-f gravel, very stiff, dry
	S0805A2		0.6			
1			0.7	FILL	SW	Light Gray c-f SAND, trace silt, catalyst beads, m-dense, dry
2			1	FILL	SW	Dark Gray c-f SAND, trace silt, catalyst beads, loose, moist, brick in tip of spoon
	S0805B2		3			
3						
4			4	FILL	SM	Dark Brown f-SAND, some silt, little c-f gravel, catalyst beads, very loose, moist, wet @ approx. 4.5' bgs
5						No Recovery
6						
7						
8			10	Native	CL	Black CLAY, very soft, wet, petroleum odor
			0.9	Native	CL	Dark Gray CLAY, rootlets, very soft, wet
9	S0805E3		0.2			
10			0	Native	CL	Dark Gray CLAY, rootlets, very soft, wet
			0			
11			0			
			0			
12.0						

Site: Chevron: Perth Amboy, NJ	Drilling Company: East Coast Drilling, Inc.	Northing: 622665.6
Boring/Well ID: S4488	Driller: J. Barnak	Easting: 555952.5
Permit No:	Consulting Firm: Parsons	Elevation: 15.9
Location: MY AOC5	Logged By: M. Bruno	Datum: Ground Surface
Start Date: 08/11/2014	Drill Rig Type: Geoprobe 7822	Total Depth (Ft BGS): 18.0 Ft
Complete Date: 08/11/2014	Drilling Method: Direct Push - Tripod	Boring Diameter (inch): NA
Field Book No:	Colocated TWP ID:	Water Depth in Soil (Ft BGS): 3.0 Ft
Weather: Clear, 85F	Screen Interval: -	

Remarks:

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
0			0	FILL	SP	Dry, medium dense, green/orange medium to fine SAND, little Silt, trace Clay
			0			
1			0			
			0			
2			0	FILL	GW	Moist, dense, gray, GRAVEL, some Silt, trace Clay
3						No Recovery
4						
5			0	FILL	GW	Wet, dense, gray/black GRAVEL. some Silt and fine to coarse Sand
			0			
6			0			
			1.5			
7			78			
			48.8			
8			45.9	FILL	SM	Wet, soft, black fine SAND and SILT, with catalysis Beads
			45.8			
9						No Recovery
10						

Site: Chevron: Perth Amboy, NJ	Drilling Company: East Coast Drilling, Inc.	Northing: 622665.6
Boring/Well ID: S4488	Driller: J. Barnak	Easting: 555952.5
Permit No:	Consulting Firm: Parsons	Elevation: 15.9
Location: MY AOC5	Logged By: M. Bruno	Datum: Ground Surface
Start Date: 08/11/2014	Drill Rig Type: Geoprobe 7822	Total Depth (Ft BGS): 18.0 Ft
Complete Date: 08/11/2014	Drilling Method: Direct Push - Tripod	Boring Diameter (inch): NA
Field Book No:	Colocated TWP ID:	Water Depth in Soil (Ft BGS): 3.0 Ft
Weather: Clear, 85F	Screen Interval: -	

Remarks:

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
10			218	FILL	OL	Wet, soft, black/gray, SILT, high plasticity, catalyst beads, petrol odor
			88.9			
11			100.1			
			67.2			
12	S4488F3G2 S4488G1 D0811148		57.1	FILL	OL	Moist, soft, black, SILT, some Clay, catalyst beads, petrol odor
			210.5			
13			56.3	FILL	SW	Moist, medium dense, brown/green, medium to fine Sand, some Silt and Clay
			30.4			
14						
15			1.5	Native	PT	Moist, soft, green/brown SILT with organic PEAT
			3.7			
16			0.9			
			8.1			
17			0			
						No Recovery
18.0						

Site: Chevron: Perth Amboy, NJ	Drilling Company: East Coast Drilling, Inc.	Northing: 621524.8
Boring/Well ID: S4581	Driller: J. Barnack	Easting: 557963.3
Permit No: NA	Consulting Firm: Parsons	Elevation: 8.2
Location: SWMU 16	Logged By: N. Henshaw/P. Fringer	Datum: Ground Surface
Start Date: 11/18/2014	Drill Rig Type: Geoprobe	Total Depth (Ft BGS): 15.0 Ft
Complete Date: 11/18/2014	Drilling Method: Direct Push	Boring Diameter (inch): 2 in
Field Book No: 298	Colocated TWP ID:	Water Depth in Soil (Ft BGS): 5.4 Ft
Weather: 20-30F, Clear, sunny, cold	Screen Interval: -	

Remarks:

Depth Ft	Sample ID	Recovery	XRF Pb	XRF As	PID	Stratum	USCS Code	Material Description
0					1.5	FILL	GW	GRAVEL base and Silt, brown, stiff, wet
					1.1	FILL	ML	Grey CATALYST BEADS and SILT, dry to moist, stiff, no plasticity, no staining, no odor
1					2.5	FILL	ML	Grey to medium grey CATALYST BEADS, and SILT, stiff, moist to dry, no plasticity, no staining, no odor
					1.3			White CATALYST BEADS, trace fines, dry, no staining, no odor, loose
2					0.2	FILL	CAT	
					0.7	FILL	ML	Dark brown SILT and Catalyst Beads, minor Brick, very stiff, moist
3					0.3	FILL	CL	Red to brown CLAY, trace small Gravel, dense, dry, moist, no staining, no odor
					0.2	FILL	ML	Dark grey SILT and Catalyst beads, moist, no staining, no odor
4						FILL		No Recovery
5					1.5			Dark grey to black SILT and Catalyst Beads, stiff at 5.6 feet, moderate to strong staining, moderate odor, wet
					99.7	FILL	ML	
6	S4581D1				38.9	FILL	WOOD	Black stained WOOD and netting, wet
	S4581D2				9.2	FILL	CL	Brown to medium brown CLAY, soft, moist, little Catalyst Beads, little staining, no odor
7					45.4			
	S4581D4				183.0	FILL	CL	Black CLAY and Catalyst Beads, wet, soft, moderate staining, strong odor, moderate plasticity
8					85.0	FILL	CL	Red to brown CLAY, stiff, wet, some staining
					15.7	NATIVE	PT/OH	Olive-green to black PEAT and organic Mud, Rootlets, plant material at 8.4 to 8.7 feet
9								No Recovery
10								

Site: Chevron: Perth Amboy, NJ	Drilling Company: East Coast Drilling, Inc.	Northing: 621524.8
Boring/Well ID: S4581	Driller: J. Barnack	Easting: 557963.3
Permit No: NA	Consulting Firm: Parsons	Elevation: 8.2
Location: SWMU 16	Logged By: N. Henshaw/P. Fringer	Datum: Ground Surface
Start Date: 11/18/2014	Drill Rig Type: Geoprobe	Total Depth (Ft BGS): 15.0 Ft
Complete Date: 11/18/2014	Drilling Method: Direct Push	Boring Diameter (inch): 2 in
Field Book No: 298	Colocated TWP ID:	Water Depth in Soil (Ft BGS): 5.4 Ft
Weather: 20-30F, Clear, sunny, cold	Screen Interval: -	

Remarks:

Depth Ft	Sample ID	Recovery	XRF Pb	XRF As	PID	Stratum	USCS Code	Material Description
10					13.4			Olive-green to green organic MUD, soft, moist, trace rootlets, no staining, no HC odor
	S4581F2				10.7			
11					8.7			
	S4581F4				2.4	NATIVE	OH	
12					1.2			
					0.8			
13					1.1			
								No Recovery
14								
15.0								

Site: Chevron: Perth Amboy, NJ	Drilling Company: East Coast Drilling, Inc.	Northing: 621677.5925
Boring/Well ID: S5198	Driller: A. Mackiewicz	Easting: 557148.5726
Permit No: NA	Consulting Firm: Parsons	Elevation: 7
Location: SWMU 19	Logged By: C. Kimak	Datum: Ground Surface
Start Date/Time: 06/06/2016	Drill Rig Type: Geoprobe	Total Depth: 15.0 Ft
Complete Date: 06/06/2016	Drilling Method: Direct Push	Boring Diameter: 2 in
Weather: 85 Deg F, Sunny	Sample Method:	Water Depth in Soil: 1 Ft
Field Book No: 317	Hammer Weight: NA	
	Hammer Drop: NA	

Remarks:

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
0			0.0			Yellow brown fine to medium SAND, trace fine to coarse Gravel, some Silt, soft, moist, no stain, no odor.
	S5198A2		0.0	FILL	SW	
1						
	S5198A3		42.4	FILL	ML	Dark gray SILT, some fine to medium Sand, Cat Beads, soft, wet, slight stain, slight odor.
			1.5	FILL	ML	Gray SILT, Cat Beads, wet, slight sheen, no odor.
2						No recovery.
3						
4						
5						

Site: Chevron: Perth Amboy, NJ		Drilling Company: East Coast Drilling, Inc.		Northing: 621677.5925			
Boring/Well ID: S5198		Driller: A. Mackiewicz		Easting: 557148.5726			
Permit No: NA		Consulting Firm: Parsons		Elevation: 7			
Location: SWMU 19		Logged By: C. Kimak		Datum: Ground Surface			
Start Date/Time: 06/06/2016		Drill Rig Type: Geoprobe		Total Depth: 15.0 Ft			
Complete Date: 06/06/2016		Drilling Method: Direct Push		Boring Diameter: 2 in			
Weather: 85 Deg F, Sunny		Sample Method:		Water Depth in Soil: 1 Ft			
Field Book No: 317		Hammer Weight: NA					
		Hammer Drop: NA					
Remarks:							
Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description	
5			2.8	FILL	SW	Yellow brown fine to medium SAND, some Silt, trace Cat Beads, soft, wet, no stain, no odor.	
							Gray SILT, Cat Beads, soft, wet, no stain, no odor.
	S5198C4		0.9	FILL	ML		
6			4.2				
			1.9	FILL	SW	Red brown fine to medium SAND, some gray Silt, soft, wet, slight sheen, slight hydrocarbon odor.	
7			13.7	FILL		Very dark brown SILT, some Fibrous Material, soft, wet, stain, hydrocarbon odor.	
	S5198D3						Very dark brown FLYASH, loose, wet, stain, hydrocarbon odor.
			6.5	FILL	ML		
8							
						Very dark brown SILT, trace fine to medium Sand, soft, wet, slight stain, no odor.	
9						No recovery.	
10							

Site: Chevron: Perth Amboy, NJ		Drilling Company: East Coast Drilling, Inc.		Northing: 621677.5925		
Boring/Well ID: S5198		Driller: A. Mackiewicz		Easting: 557148.5726		
Permit No: NA		Consulting Firm: Parsons		Elevation: 7		
Location: SWMU 19		Logged By: C. Kimak		Datum: Ground Surface		
Start Date/Time: 06/06/2016		Drill Rig Type: Geoprobe		Total Depth: 15.0 Ft		
Complete Date: 06/06/2016		Drilling Method: Direct Push		Boring Diameter: 2 in		
Weather: 85 Deg F, Sunny		Sample Method:		Water Depth in Soil: 1 Ft		
Field Book No: 317		Hammer Weight: NA				
		Hammer Drop: NA				
Remarks:						
Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
10			10.2	FILL	ML/SW	Very dark brown SILT, some fine to medium Sand, some gray Silt, Cat Beads, loose, wet, some staining, hydrocarbon odor.
			6.5	FILL		Very dark brown FLYASH, loose, moist, some stain, no odor.
11			3.9			Olive green PEAT, some Silt, no stain, organic matter odor.
	S5198F4		12.8			
12			1.9	NATIVE	PT	
	S5198G2		1.9			
13						
						No recovery.
14						
15.0						

Site: Chevron: Perth Amboy, NJ	Drilling Company: East Coast Drilling, Inc.	Northing: 619672.56
Boring/Well ID: S5277	Driller: A. Mackiewicz	Easting: 560472.19
Permit No: NA	Consulting Firm: Parsons	Elevation: 11.13
Location: AOC 14/26	Logged By: M. Emmer	Datum: Ground Surface
Start Date/Time: 08/16/2016	Drill Rig Type: Geoprobe	Total Depth: 25.0 Ft
Complete Date: 08/16/2016	Drilling Method: Direct Push - Split Spoon	Boring Diameter: 2 in
Weather: sun, 80s	Sample Method: Split Spoon	Water Depth in Soil: 7 Ft
Field Book No: 320	Hammer Weight: NA	
	Hammer Drop: NA	

Remarks: Wood in tip of spoon on 5-10ft run, redid 7-10ft due to poor recovery

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
0			0	FILL	GP	ASPHALT
1			0			Red Black c-f SAND, some silt, some gravel, dry, loose, no stain, no odor, wood at 3.5' bgs.
			0			
			0			
2			0	FILL	SM	
			0			
3	S5277B3		1.3			
			9.6			
4				FILL		No Recovery
5			1			Black c-f SAND, some c-f gravel, some silt, concrete, slag, dry, no staining
			1.3	FILL	SW/GW	
6			10.6			
			280			
7			4.9			Same as above 7-10' interval, except wet
			20.6	FILL	SW/GW	
8	S5277E1		133			
			79.1			
9			50			
			48.6			
10						

Site: Chevron: Perth Amboy, NJ		Drilling Company: East Coast Drilling, Inc.		Northing: 619672.56	
Boring/Well ID: S5277		Driller: A. Mackiewicz		Easting: 560472.19	
Permit No: NA		Consulting Firm: Parsons		Elevation: 11.13	
Location: AOC 14/26		Logged By: M. Emmer		Datum: Ground Surface	
Start Date/Time: 08/16/2016		Drill Rig Type: Geoprobe		Total Depth: 25.0 Ft	
Complete Date: 08/16/2016		Drilling Method: Direct Push - Split Spoon		Boring Diameter: 2 in	
Weather: sun, 80s		Sample Method: Split Spoon		Water Depth in Soil: 7 Ft	
Field Book No: 320		Hammer Weight: NA			
		Hammer Drop: NA			
Remarks: Wood in tip of spoon on 5-10ft run, redid 7-10ft due to poor recovery					

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
10			15.2	FILL	SW/GW	Black c-f SAND, some c-f gravel, little silt, little clay, wet, sheen, loose, petro odor, 11-12' wood, wet, oily
			64.7			
11			33.4			
	S5277H4		36.8			
12			50.75	FILL	SW/GW	Same as above 10-12' interval
	S5277G2		93.2			
13				FILL		No Recovery
14						
15						
16			62	FILL	SW/GW	Black c-f SAND and GRAVEL, some concrete and slag, wet, sheen, dense, faint petro odor
			5.4			
17			5.6			
			2			
			1.4			
			1.4			
18			1.6	FILL		TAR, brick, hard
			1.2			
19				FILL		No Recovery
20						

Site: Chevron: Perth Amboy, NJ	Drilling Company: East Coast Drilling, Inc.	Northing: 619672.56
Boring/Well ID: S5277	Driller: A. Mackiewicz	Easting: 560472.19
Permit No: NA	Consulting Firm: Parsons	Elevation: 11.13
Location: AOC 14/26	Logged By: M. Emmer	Datum: Ground Surface
Start Date/Time: 08/16/2016	Drill Rig Type: Geoprobe	Total Depth: 25.0 Ft
Complete Date: 08/16/2016	Drilling Method: Direct Push - Split Spoon	Boring Diameter: 2 in
Weather: sun, 80s	Sample Method: Split Spoon	Water Depth in Soil: 7 Ft
Field Book No: 320	Hammer Weight: NA	
	Hammer Drop: NA	

Remarks: Wood in tip of spoon on 5-10ft run, redid 7-10ft due to poor recovery

Depth Ft	Sample ID	Recovery	PID	Stratum	USCS Code	Material Description
20			1.1	Native	GP	Gray m-c SAND, trace shells, wet, no odor, no sheen or staining
			1.5			
21			1.6			
			1			
22			0.9			
			5.6	Native	PT	Olive Gray CLAY and SILT, some root fragments, wet, no odor, no staining
23			5.3			
			2.8			
24			1.2			
			1.4			
25.0						

DATE STARTED: 8/10/98		QST Environmental		SOUTH -		SHEET		OF	
DATE FINISHED: 8/16/98		BORING REPORT		ACE		BORING NO.			
CLIENT: Chemtron						SB-0052		HP-0158	
PROJECT NAME AND LOCATION: 1st Phase RFI									
PROJECT NO.(S):									
BORING CONTRACTOR: EPT Co.				BORING FOREMAN: M. Pepper / B. Colcot					
GEOLOGIST: J. Macdretzke				INSPECTOR:					

EQUIPMENT:	CASING	SOIL SAMPLER		CORE BARREL	AUGER	OBS. WELL (OW)		DRILLING RIG AND METHOD
		SPLIT SPOON (SS)	UNDISTURBED (US)			PIPE	CAP	
TYPE:		Stainless	Discrete			PVC	PVC	Harrisane
SIZE:		2" x 24"	2" x 24"			1"	Screen	Track Direct
HAMMER WT/FALL					BIT			Make Push

SURFACE ELEVATION: _____ NORTH COORDINATE: _____ EAST COORDINATE: _____

SURFACE CONDITIONS: _____

GROUNDWATER AT: 10 FT. AFTER 1/2 HRS. FT. AFTER HRS.

DEPTH BELOW GND.	OBSERVATION READING (PPM)	TYPE & NO.	SAMPLE			BLOWS/6" OR CORE TIME	STRATA Unified Soil Classif.	DESCRIPTION AND REMARKS
			DEPTH FROM-TO	PEN IN.	REC			
0	5.0 ppm						GM	Top 5' gravel; bottom 1.5' CLAY w/ SAND (CL)
2	59.0 ppm	SS-1			2'		CL	Block staining, 270% low plasticity, fine, 35-30% fine sand, trace gravel, strong hydrocarbon odor, bag of wood at 1.5 ft
2	242.0							Same as SS-1; moist, soft, trace, fine gravel, block staining at 3-4 ft (Fall)
4	16.0 ppm	SS-2			2'		CL	
4	17.0 ppm							
4	10.0 ppm							
4	5.0							
4	137.0 ppm							
6	7.0	SS-3			1.5'		CL	Same as SS-2; block staining at 1.5 ft, 5 ft, 6 ft (Fall)
6	2.0							
6	0.0 ppm							
6	7.0 ppm							
8	7.0	SS-4			2'		CL	CLAY w/ SAND (ci) brown to black, 270% low plasticity, fine, 30% fine sand, trace fine gravel, asphaltic LNAPL HOCARE, breeding, moist, soft (Fall)
8	34.0							
8	16.0							
8	106.0	SS-5			2'		CL	Same as SS-4; asphaltic LNAPL HOCARE. (Fall)
10	47.0							
10	11.0							
10	11.0	SS-6			2'		CL	Same as SS-5; wet at 1.5 ft, asphaltic LNAPL HOCARE. (Fall)
12	11.0							
12	110.0							
12	96.0							
12		SS-7			2'		CL/ott	Top 1.5' same as SS-6; bottom 0.5' CLAY (CL) gray to dk gray, 29% high plasticity, fine, 50% fine sand, moist, soft to firm, some organic, vertical roots.
14								
		SS-8						

↓ Do boring at 14 ft BGS
 + Set 1" PVC Screen at 4-14 ft BGS.

Set Screen at 14 ft BGS.

TYPE BORING:	CASING	TO	FT THEN	MEASURING	US TUBES	L.F. ON PIPE
QUANTITIES:	L.F. SOIL	L.F. ROCK	S.S. SAMPLES			

Samples collected 8/14/98

Project Name: Corrective Action Projects	Site Id: U007-014
-1st Phase RFI-	Location: NORTH FIELD - SWMU 7
Logged By: D. SCILLIERI	Date(s): 10/12/95 - 10/12/95
Consulting Firm: E.S.E., INC.	Drill: Geoprobe - Stainless Steel Split Spoon
Contractor: E.P.I.	Borehole Dia.: 2.00in
Remarks:	Total Depth: 10.00'
	Groundwater Depth: 6.00'
	Datum: MEAN SEA LEVEL

Depth (ft)	PID	Recovery	Water Level	Graphic Log	USCS Code	Material Description (Burmeister)	Sample No.
						Trace 0-10% Little 10-20% Some 20-35% And 35-50%	
	0.0 ppm				FI	[FILL] 0.4' Brown f-m SAND, dry 1.5' Light gray SILT, dry 0.1' Brown m-c SAND, little Catalyst Beads, dry	
	85.0 ppm				FI	[FILL] CATALYST BEADS and Light gray SILT, little brown f-m Sand, tr f-m Gravel, dry	
5	0.0 ppm				FI	[FILL] 2.0' CATALYST BEADS, some brown f Sand, tr concrete fragments, wet at bottom of spoon	
	873.0 ppm				FI	[FILL] 1.5' CATALYST BEADS, wet, black staining 0.5' Silty CLAY, tr fiborous material, wet, petroleum odor, black staining, sheen	
	38.0 ppm				FI	[FILL] 0.5' CATALYST BEADS, wet, petroleum odor, black staining 0.5' Same As Above and CLAY, wet, petroleum odor, black staining 1.0' Black stained CLAY, tr wood fragments, wet, petroleum odor	
10							